| **Virginia Board of Education Agenda Item** | **Seal of the Commonwealth of Virginia** |
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## Agenda Item: C

## Date: September 19, 2019

## Title: Final Review of the Proposed Revised 2017 *Computer Science Standards of Learning* Curriculum Framework

## Presenter: Mr. Timothy Ellis, Computer Science Specialist, Office of STEM and Innovation

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## Purpose of Presentation:

Action required by state or federal law or regulation.

## Executive Summary:

The Standards of Learning are a critical communication with the citizens of the Commonwealth, parents, the business community, and higher education because the Standards convey expectations and intended outcomes for K-12 education. Equally as important, the Standards and the frameworks serve as the key guidance for instructional leaders and teachers of computer science (elementary, middle, high school) in and integrating computer science concepts into K-8 instruction and planning computer science curricula at the secondary level.

The Board of Education approved the 2017 *Computer Science* *Standards of Learning* in November, 2017. The currentstandards may be viewed online at <http://www.doe.virginia.gov/testing/sol/standards_docs/computer-science/index.shtml>.

The 2017 Computer Science Curriculum Frameworks were developed to support teachers and administrators in the instruction of the *Computer Science Standards of Learning*. This document, constructed with the assistance of teachers and computer science leaders across the Commonwealth, outlines the expectations of students as they demonstrate mastery of the computer science content and the skills. The *Computer Science Curriculum Framework* is constructed to prepare teachers for either the integration of computer science content and practices within core content instruction (K-8) or to support the instruction of secondary computer science coursework. School divisions are encouraged to incorporate the Curriculum Framework into a broader, locally designed curriculum. The Curriculum Framework delineates in greater specificity the minimum content that all teachers should teach and all students should learn.

In support of *Profile of a Virginia Graduate*, the proposed Computer Science Curriculum Framework provides support for teachers and educational leaders, strengthen pathways within K-12 computer science education through a focus on providing vertical progression of computer science content, and will better prepare students for college and careers through a greater emphasis on critical thinking and problem solving.

In accordance with the approved *Computer* *Science Standards of Learning* revision timeline, the Department of Education took the following steps to produce the proposed revised *Curriculum Science Standards of Learning Curriculum Framework* for the Board’s review:

* Posted Superintendent’s Memo #176-19, July 26, 2019, in order to solicited review input from teachers, administrators, curriculum supervisors, and the general public,
* Received public comments from stakeholders on the proposed 2017 *Computer Science Standards of Learning Curriculum Framework*
  + Received 33 sets of comments from educators, science education organizations, businesses, and school divisions.
  + Conducted four webinars with the intent of informing stakeholders on the changes to the structure of the framework as well as to solicit public comment.
* Reviewed public comment to revise the proposed *2017 Computer Science Standards of Learning Curriculum Framework* found in Attachment A.

**Summary of Major Elements:**

The attached drafts of the Proposed Revised 2017 *Computer* *Science Standards of Learning Curriculum Framework* include revisions since first review in response to public comment, as listed.

Proposed Revised 2017 *Computer Science Standards of Learning Curriculum Framework*

* Edits to provide constancy and parallelism in language vertically in computer science.
* Grammar and language edits.
* Edits to more clearly articulate or correct computer science content expectations.

All edits found in the proposed revised drafts have been tracked using the following system:

* a single underline (sample) indicates content added to the proposed revised 2017 *Computer Science Standards of Learning Curriculum Framework*; and
* a single strikethrough (~~sample~~) indicates content deleted from the 2017 *Computer Science Standards of Learning Curriculum Framework*.

Technical edits for grammar, spelling, or suggested rewording are not indicated in the revised proposed 2017 *Computer Science Standards of Learning Curriculum Framework*.

## Action Requested:

Final review: Action requested at this meeting.

## Superintendent’s Recommendation:

The Superintendent of Public Instruction recommends the Board approve for final review the proposed revisions to the 2017 *Computer Science Standards of Learning* Curriculum Framework.

**Rationale for Action:**

The *Code of Virginia* requires the review and revisions of the Standards of Learning in each subject area every seven years. Action by the Virginia Board of Education allows the Virginia Department of Education to provide school divisions with the revised 2017 *Computer* *Science Standards of Learning* Curriculum Framework.

## Previous Review or Action:

Previous review and action. Specify date and action taken below:

Date: July 25, 2019

Action: First Review

## Background Information and Statutory Authority:

The Board of Education has made a commitment to maintain rigorous and relevant expectations for student learning that meet or exceed national and international benchmarks for college and career readiness. The proposed revised *Computer Science Standards of Learning* Curriculum Framework provide support for the instruction of these standards.

*Code of Virginia*, Section 22.1-253.13:1-B… “The Board of Education shall establish a regular schedule, in a manner it deems appropriate, for the review, and revision as may be necessary of the Standards of Learning in all subject areas. Such review of each subject area shall occur at least once every seven years. Nothing in this section shall be construed to prohibit the Board from conducting such review and revision on a more frequent basis…”

This Board item relates to Priority 1 of the *Virginia Board of Education Comprehensive Plan: 2018-2023* to provide high quality, effective learning environments for all students.

Summary of Online Comments on Virginia’s proposed 2017 *Computer* *Science Standards of Learning*

The public comment period, public hearing webinars, and the online platform for submitting comments were announced through Superintendent’s Memo, the VDOE website, and through multiple communication channels.

* Excitement about the standards and framework are evident throughout most comments
* Concerns about the expectations for school divisions to demonstrate implementation of the 2017 Computer Science Standards.
* Requests for professional development and resources for teachers and administrators
* Guidance requested concerning secondary pathways in computer science
* Questions concerning endorsement requirements for computer science courses.
* Request to align references to computational thinking to increase consistency across the document
* Proposed technical edits
* Feedback and input to increase vertical alignment of content within strands

Many of these comments led to the revisions in the attached 2017 *Computer* *Science Standards of Learning* Curriculum Framework and will be used to shape technical assistance through the implementation process.

## Timetable for Further Review/Action:

Following the Board of Education’s approval of the Proposed Revised 2017 *Computer* *Science Standards of Learning* Curriculum Framework, the Department of Education will provide technical support to divisions for the implementation of the standards and curriculum framework.

Table 1

2017 Computer Science Standards of Learning Anticipated Implementation Timeline and Communication Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **School Year** | **Date** | **Action** | **Communication** | **Method** |
| 2019-2020 | September | Anticipated Final Review of the proposed 2017 *Computer* *Science Standards Curriculum Framework* | Announce final review of the 2017 *Computer Science Standards Curriculum* *Frameworks* and timeline of implementation | Superintendent’s Memo, VDOE social media, TeacherDirect, and other communication channels |
| 2019-2020 | School divisions begin incorporating 2017 *Computer Science* SOL and CF into written curricula |  |  |
| Fall | VDOE provides professional development on the changes to the SOL and CF | Professional Development conducted at core discipline support organizations | Superintendent’s Memo, VDOE social media, TeacherDirect, and other communication channels |
| Winter | Conduct statewide needs assessment to include teachers and administrators to determine computer science support needed to support instruction of Computer Science. | Create needs assessment and announce opportunity to division teachers and leaders. | Superintendent’s Memo, VDOE social media, TeacherDirect, and other communication channels |
| 2020-2021 | Spring | Construct a team to work on integration of computer science concepts and practices into existing and newly developed lesson plans. | Solicit help from computer science leaders and teachers to develop integrated or discipline specific lesson plans | Teacher Direct, VDOE Computer Science Newsletter |
| Fall/ Winter | VDOE integrated lesson plans within core disciplines posted on line (either on VDOE website or in OER). | Announce posting of resource | Superintendent’s Memo, VDOE social media, TeacherDirect, and other communication channels |
| Fall and Spring | Continued Professional Development on the effective integration of computer science into instruction | Announce professional learning opportunities. | Superintendent’s Memo, VDOE social media, TeacherDirect, and other communication channels |

**Impact on Fiscal and Human Resources:**

The Department of Education administers the state standards and curriculum framework review process and the implementation of those standards and curriculum, once approved by the Board. The agency’s existing resources can absorb the standard review responsibility at this time.